

WHAT IS CLAIMED IS:

1. A video inspection system comprising:  
a first image sensor operable to acquire an image in  
a first direction along a first axis;

a second image sensor operable to acquire an image in a second direction essentially perpendicular to the first direction; and,

a camera board and processor coupled to the first image sensor and second image sensor operable to receive an image from either the first image sensor or second image sensor and prepare the image for display.

2. The video inspection system of Claim 1, wherein the second image sensor is an array of image sensors operable to acquire an image 360 degrees around the first axis in the second direction.

3. The video inspection system of Claim 1, wherein the camera is mounted in a water tight, pressure sealed camera assembly for use in a bore hole or water well.

4. The video inspection system of Claim 1, wherein the camera is mounted in a sealed assembly for use in a pipeline and the first axis is parallel to the long axis of the pipeline.

5. The video inspection system of Claim 3, wherein the camera assembly transmits images to a monitor via coaxial cable, the monitor operable to receive the output of the camera board and processor.

6. The video inspection system of Claim 5, wherein the coaxial cable includes a quick disconnect to allow easy removal and installation of camera assemblies and other tools.

7. The video inspection system of claim 5, wherein the coaxial cable is stored on a spool in a transportable case.

5 Sub  
B2-123

8. The video inspection system of Claim 5, wherein the coaxial cable passes over a cable arm encoder operable to determine the depth of the camera and display it on the monitor from the output of the camera board and processor.

10 9. The video inspection system of Claim 1, wherein the camera is mounted in a camera assembly operable to rotate about the first axis when the second image sensor is acquiring an image.

15 10. The video inspection system of Claim 1, wherein the first image sensor and second image sensors are a single image sensor, the single image sensor mounted in a rotatable housing, the single image sensor operable to acquire an image in a first direction along a first axis when the rotatable housing is in a first setting, the  
20 single image sensor operable to acquire an image zero to ninety degrees offset from the first direction.

25 11. The video inspection system of Claim 10, wherein the rotatable housing is operable to rotate around the first axis, the single image sensor operable to acquire an image as the rotatable housing rotates.

30 12. The video inspection system of Claim 10, wherein the camera is mounted in a water tight, pressure sealed camera assembly for use in a bore hole or water well.

13. The video inspection system of Claim 10, wherein the camera is mounted in a sealed camera assembly for use

653290 00053363

in a pipeline and the first axis is parallel to the long axis of the pipeline.

5 14. The video inspection system of Claim 12, wherein the camera assembly is attached to a monitor via coaxial cable, the monitor operable to receive the output of the camera board and processor.

10 *Sub a7* 15. The video inspection system of Claim 14, wherein the coaxial cable includes a quick disconnect to allow easy removal and installation of camera assemblies and other tools.

15 16. The video inspection system of claim 14, wherein the coaxial cable is stored on a spool in a transportable case.

20 17. The video inspection system of Claim 14, wherein the coaxial cable passes over a cable arm encoder operable to determine the depth of the camera and display it on the monitor with the output of the camera board and processor.

Sub  
R-25

5

18. A video inspection system comprising:  
an image sensor in a housing operable to capture  
an image in a first direction parallel to a first axis, the  
image sensor further operable to capture an image in a  
second direction, the second direction approximately  
perpendicular to the first directions; and,

10

a camera board and processor coupled to the image  
sensor and operable to process the image and prepare it for  
display.

15

19. The video inspection system of Claim 18, wherein  
the housing is rotatable and operable to rotate from a  
first direction to a second direction and operable to  
rotate around the first axis when in a second direction,  
the image sensor operable to capture an image when in a  
first position, a second position and any position in  
between.

20

20. The video inspection system of Claim 18, wherein  
the image sensor comprises one image sensor operable to  
capture an image in the first direction and a second image  
sensor operable to capture an image in a second direction.

25

21. The video inspection system of Claim 20, wherein  
the housing is operable to rotate about the first axis such  
that the second image sensor can capture an image as the  
housing rotates.

30

22. The video inspection system of Claim 20, wherein  
the second image sensor is further comprised of a series of  
image sensors spaced about the housing and operable to  
capture an image about the first axis without rotating the  
housing.

35

Sub  
a6

23. The video inspection system of Claim 18, wherein the image sensor is mounted in a water tight, pressure sealed camera assembly for use in a bore hole or water well.

5

SUB 34

24. The video inspection system of Claim 18, wherein the image sensor is mounted in a sealed camera assembly for use in a pipeline and the first axis is parallel to the long axis of the pipeline.

10

Sub  
a7

25. The video inspection system of Claim 24, wherein the camera assembly is attached to a monitor via coaxial cable, the monitor operable to receive the output of the camera board and processor.

15

26. The video inspection system of Claim 25, wherein the coaxial cable includes a quick disconnect to allow easy removal and installation of camera assemblies and other tools.

20

27. The video inspection system of claim 25, wherein the coaxial cable is stored on a spool in a transportable case.

25

Sub  
a8

28. The video inspection system of Claim 25, wherein the coaxial cable passes over a cable arm encoder operable to determine the depth of the camera and display it on the monitor with the output of the camera board and processor.

SUB 35

29. A system for video inspection of a passage comprising:

5 a carrying case having a deep housing and a removable cover;

a spool adapted for storing coaxial cable inside the carrying case, the coaxial cable exiting the carrying case at an opening;

10 a cable arm supported by an adjustable leg, the cable arm attached to the carrying case, the cable arm operable to have the coaxial cable pass over it; and,

15 a camera assembly, coupled to the coaxial cable, having a single camera operable to capture an image in a first direction along a long axis and capture an image in a second direction, the second direction ninety degrees offset from the first direction.

20 30. The system of Claim 29, wherein the carrying case further includes a monitor operable to display the image captured by the single camera.

31. The system of Claim 29, wherein the coaxial cable includes a quick disconnect near the camera assembly.

25 32 The system of Claim 29, further including a cable arm encoder operable to measure the length of cable to determine the distance the camera assembly has traveled.

Sub  
a-9  
33. A video inspection system comprising:  
a camera assembly including:

an upper section having a camera card; and a  
stepper motor coupled to the end of the upper section;

5 a lower section, coupled to the upper section and  
the stepper motor, operable to rotate about an axis when  
the stepper motor is operational, the lower section further  
comprising;

an upper part having a high torque dc motor;

10 and

a lower part coupled to the upper part by a  
pivoting means, the pivoting means driven by the high  
torque motor and operable to pivot the lower part from a  
down view to a side view; the lower part further comprising  
15 an image sensor coupled to the camera card and operable to  
acquire an image in a down position and a side position and  
any position in between, the image sensor further operable  
to acquire an image as the lower section rotates about an  
axis.  
20